similarly favorable conditions of the watershed or the downpour of rain. Since the canyons have been recently cleansed, particularly Willard Canyon, a heavy rain could not now carry out nearly so much débris.

There is unquestionably an important connection between these floods and the partial denudation of the ground cover of the watersheds by vegetation, fires, and livestock grazing. But without touching the question of lessening the flood danger by a simple reduction in the number of livestock grazed, it is worthy of mention that the heavy rain occurring in City Creek Canyon, which debouches near the business center of Salt Lake City, as shown by the Marvin float gage at the High Line, served to raise the stream only 0.27 foot, or about 3 inches. The watershed comprises about 25 or 30 square miles, much of it being rather steep; but it has not been grazed at all, nor extensively burned over, for about 20 years.

Flood stages during August, 1923.

River and station.	Flood stage.	Above flood stages—dates.		Crest.	
		From—	To—	Stage.	Date.
ATLANTIC DRAINAGE.					
	Feet.			*Feet.*	
Santee: Rimini, S. C.	12	31	(1)	12.9	31
Saluda: Pelzer, S. C.	7	29	29	11.9	29
MISSISSIPPI DRAINAGE.					
Arkansas:					
Fort Lyon, Colo.	6	18	18	8.0	18
Do.	6	22	22	8.6	22
Dodge City, Kans.	5	20	20	5.8	24
Purgatoire: Higbee, Colo.	4	22	22	4.8	22

[1] Continued into September.

MEAN LAKE LEVELS DURING AUGUST, 1923.

By UNITED STATES LAKE SURVEY.

[Detroit, Mich., Sept. 5, 1923.]

The following data are reported in the "Notice to Mariners" of the above date:

Data.	Lakes.[1]			
	Superior.	Michigan and Huron.	Erie.	Ontario.
Mean level during August, 1923:	*Feet.*	*Feet.*	*Feet.*	*Feet.*
Above mean sea level at New York	602.06	579.76	571.70	245.41
Above or below—				
Mean stage of July, 1923	+0.19	−0.13	−0.34	−0.39
Mean stage of August, 1922	−0.53	−0.83	−0.80	−1.15
Average stage for August, last 10 years	−0.67	−1.20	−1.08	−1.15
Highest recorded August stage	−1.87	−3.75	−2.41	−2.85
Lowest recorded August stage	+0.46	−0.09	+0.32	+1.06
Average relation of the August level to—				
July, level	.....	−0.10	−0.20	−0.30
September, level	.....	+0.20	+0.30	+0.40

[1] Lake St. Clair's level: In August, 574.61 feet.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, AUGUST, 1923.

By J. B. KINCER, Meteorologist.

The droughty conditions that obtained in the lower Great Plains from southern Kansas southward at the close of July were much intensified by continued absence of rain during the first three weeks of August. Hot and dry weather prevailed in that area resulting in a general and, in some cases, marked deterioration in growing crops. The drought was especially severe in Oklahoma, and scattered showers that were received in Texas and southern Kansas were mainly ineffective. The last week of the month brought relief, however, when heavy rains occurred in the driest portion of the area, and fairly well-distributed showers in most other sections. The rain came too late, however, for some crops in Oklahoma, but others, such as truck, late cotton, and sorghum, were materially benefited.

Winter wheat harvest was practically completed during the first half of the month, except in a few late districts, but there was considerable delay in threshing, because of wet weather, in the Ohio and upper Mississippi Valleys and in Nebraska. The cooler weather the first part of the month favored the filling of spring grains in central Rocky Mountain districts, while showers were beneficial in the central Plateau sections of the West. Threshing small grains advanced satisfactorily during the latter part of the month in the Northern States, but there was considerable damage to grain in shock by wet weather in some central valley districts.

Timely and beneficial showers, with good growing temperatures, gave very favorable conditions for corn during the first two decades of the month throughout the principal producing districts, except in the southern Great Plains and in northern Iowa where moisture was deficient. This crop was badly damaged by drought in Oklahoma and portions of the adjoining States. The latter part of the month, however, was much too cool for corn in the great central valleys, the Central-Northern and Northeastern States, and at its close the crop needed more sunshine and warmth generally. Conditions continued rather favorable, however, in the extreme lower Missouri Valley and much of the Central Plains area.

The month was generally unfavorable for cotton. The severe drought in the western portion of the belt caused general deterioration in Texas, while much complaint of wilting and shedding, with bolls opening prematurely, was received from Oklahoma. Rainfall was less frequent, however, in most of the eastern portions of the belt, particularly in southeastern localities, but there was little response of the crop to the more favorable conditions, while the latter part of the month again brought cloudy, showery, and unfavorable weather. The drought was broken in the western portion of the belt near the close of the month, and shedding and premature opening were checked, with a general improvement in condition in most sections.

There was sufficient rainfall to maintain pastures in good condition in all sections east of the Mississippi River, except that they were short in most places from the Lake region eastward. In many portions of New York the water supply was low, while it was much too dry in many other sections of the Northeastern States. Showers in the far Southwest materially improved the range, while the generous rains from the southern Plains southward the latter part of the month were of great benefit.

Fruit generally did well, though there was some frost damage to cranberries in Wisconsin the latter part of the month. Fruits were especially promising in the far West, and citrus developed well in both Florida and California, though rain was needed locally in parts of the former State.